

REMARKS

Claims 1, 3, 8-11 and 14-34 were pending in the application. Claims 14-18 and 33 have been withdrawn from examination. Claims 1, 10, 19-27, 29, and 31 have been amended. Claim 28 has been canceled without prejudice or disclaimer. No claims have been added. Therefore, claims 1, 3, 8-11, 14-27, and 29-34 remain pending and are resubmitted for consideration.

Acknowledgement of Priority and Receipt of Pertinent Documents

Applicants request that the Examiner acknowledge Applicants' claim to priority, and acknowledge receipt of the certified copies of the priority documents.

Numbering of Claims

Claims 30-35 were previously misnumbered. Claim number 29 was unintentionally skipped. Therefore, claims 30-35 have been renumbered to be claims 29-34, respectively.

Rejections Under 35 U.S.C. §112, First Paragraph

Claims 1, 3, 8-11, 20-24, and 26-32 are rejected under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirement. The rejection should be withdrawn for at least the following reasons.

Without acquiescing to the validity of the rejection of claim 1, Applicants have amended the claim. Claim 1 has been amended to delete the term "expansion" and has been amended as appropriate. For example, claim 1 has been amended to state that: "the inner and outer structurally supporting wall elements [are] configured to take the forces acting on the vertical wall and to protect the fluid tight barrier from loads, wherein the inner structurally supporting wall element [resists] against contraction." Support for claim 1 may be found, among other places, in paragraphs [0014], [0015], and [0039] of the published application. No new matter has been added.

Without acquiescing to the validity of the rejection of claim 20, Applicants have amended the claim. For example, claim 20 has been amended to replace the phrase "inner and outer steel ring" with the phrase "inner and outer vertical steel plates" as appropriate.

Without acquiescing to the validity of the rejection of claim 27, Applicants have amended the claim to delete the outer wall element.

Without acquiescing to the validity of the rejection of claim 28, Applicants have canceled claim 28. Therefore, for at least the reasons stated above, the rejection under 35 U.S.C. § 112, first paragraph, should be withdrawn. Reconsideration and withdrawal of the rejection is respectfully requested.

Repetitious Claim Limitations

Claim 19 is requested to be revised for allegedly containing repetitious claim language. Claim 19 has been amended to delete the allegedly repetitive phrase. Applicants respectfully submit that claim 19 is in condition for allowance.

Allowable Subject Matter

Applicants appreciate the indication that claims 19, 25 and 34 are allowed. Applicants respectfully submit that claims 20 and 21, which depend from claim 19, should also be in condition for allowance. Thus, claims 19-21, 25, and 34 should be allowed.

Applicants also appreciate the indication that claims 8-11 contain allowable subject matter if the 35 U.S.C. § 112 rejection is withdrawn. Applicants respectfully submit that the rejection under 35 U.S.C. § 112 should be withdrawn and that claims 8-11 contain allowable subject matter. At this time, claims 8-11 remain dependent from claim 1.

Rejection under 35 U.S.C. § 102(b) – Bomhard

Claims 1, 22-24, 26-29 and 32 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,366,654 (“Bomhard”). The rejection should be withdrawn for at least the following reasons.

Amended claim 1 calls for a tank for storing cryogenic fluids that comprises, among other things, an inner tank with a vertical wall:

wherein the vertical wall comprises an inner structurally supporting wall element made of concrete, *the inner structurally supporting wall element being an innermost wall element of the inner tank*, and an outer structurally supporting wall element made of concrete,

wherein the fluid tight barrier is arranged between the inner and the outer structurally supporting wall elements, the structurally supporting wall elements and the intermediate fluid tight barrier together forming a compact, integrated structural load bearing and fluid tight wall, ***the inner and outer structurally supporting wall elements being configured to take the forces acting on the vertical wall and to protect the fluid tight barrier from loads, and the inner structurally supporting wall element resisting against contraction forces resulting from storing the cryogenic fluid in the inner tank.***

Claims 22-24, 26-29 and 32 depend from claim 1. Bomhard fails to teach or suggest such a tank.

Bomhard discloses a double-walled tank 1 with an inner tank 3 and an outer tank 2. The inner tank 3 includes a side wall 9, and the outer tank 2 includes a side wall 4. The inner tank side wall 9 is separated from the outer tank side wall 4 by a metal liner 11. *See* Bomhard at Figs. 1 and 2. The inner tank 3 is made of metal. *See* Bomhard at col. 2, lines 67-69. The outer tank 2 is formed of concrete. *See* Bomhard at col. 2, lines 62-65. The inner tank side wall 9 is separated from the metal liner 11 by a reinforced concrete ring 14, 15 and a thermal insulation layer 13. *See* Bomhard at Fig. 2.

The examiner contends that the metal liner 11 corresponds to a “fluid tight barrier,” that the concrete ring 14, 15 corresponds to an “inner structurally supporting wall element” and that the outer tank side wall 4 corresponds to an “outer structurally supporting wall element.” *See* Office Action at p. 5. Applicants respectfully disagree.

First, Bomhard explicitly discloses that the side wall 4 is a wall of **a different tank**, not an outer wall element of the inner tank. *See* Bomhard at col. 2, lines 61-65. The outer tank side wall 4 is configured to prevent leaks from escaping and is not an outer structurally supporting wall element of the inner tank’s vertical wall. *See* Bomhard at col. 1, lines 13-18.

Second, Bomhard does not teach or suggest that the alleged inner structurally supporting wall element (concrete ring 14, 15) is ***the innermost*** wall element of the inner tank as required by claim 1. Rather, side wall 9 of Bomhard is the innermost wall element of the inner tank. Furthermore, the innermost wall element of the inner tank (side wall 9) does not “take the forces acting on the vertical wall and to protect the fluid tight barrier from loads,

and the inner structurally supporting wall element resisting against contraction forces resulting from storing the cryogenic fluid in the inner tank.” On the contrary, Bomhard explicitly teaches that the inner tank side wall 9 does **not** carry out any load-bearing function. *See* Bomhard at col. 2, lines 32-35. Additionally, the inner structurally supporting wall element (and innermost wall element) is not made of concrete. On the contrary, the innermost wall element (side wall 9) is made of metal. *See* Bomhard at col. 2, lines 66-68.

Therefore, for at least the reasons given above, the rejection of claim 1 over Bomhard should be withdrawn. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claims 22-24, 26-29 and 32 depend from claim 1 and are allowable therewith, for at least the reasons set forth above, without regard to the further patentable subject matter set forth in these dependent claims.

Furthermore, Bomhard clearly fails to teach or suggest each and every element of claim 29. For example, Bomhard does not disclose that “the inner tank includes an interior volume, wherein the *concrete inner structurally supporting wall element is directly exposed* to the interior volume, wherein the fluid tight barrier is directly exposed to the concrete inner structurally supporting wall element, and wherein the concrete outer structurally supporting wall element is directly exposed to the fluid tight barrier” as called for in claim 29. Thus, claim 29 should also be in condition for allowance for at least this additional reason.

Rejection under 35 U.S.C. § 102(b) – GB 892

Claims 1, 22-24, 26-29 and 32 are rejected under 35 U.S.C. § 102(b) as being anticipated by GB 1341892 (“GB 892”) The rejection should be withdrawn for at least the following reasons.

GB 892 fails to teach or suggest a tank for storing cryogenic fluids (claim 1) that comprises, among other things, an **inner** tank with a vertical wall, and:

wherein the vertical wall comprises an inner structurally supporting wall element made of concrete, ***the inner structurally supporting wall element being an innermost wall element of the inner tank***, and an outer structurally supporting wall element made of concrete,

wherein the fluid tight barrier is arranged between the inner and the outer structurally supporting wall elements, the structurally supporting wall elements and the intermediate fluid tight barrier together forming a compact, integrated structural load bearing and fluid tight wall, ***the inner and outer structurally supporting wall elements being configured to take the forces acting on the vertical wall and to protect the fluid tight barrier from loads, and the inner structurally supporting wall element resisting against contraction forces resulting from storing the cryogenic fluid in the inner tank.***

Claims 22-24, 26-29 and 32 depend from claim 1.

GB 892 discloses a cryogenic storage structure that includes a container with a side wall 12 and roof system 14. The structure may also include a mass wall of concrete 46 outside of and surrounding the container, and an outer wall 50. *See* GB 892 at p. 1, lines 73-87; and Fig. 3.

The Examiner contends that GB 892 discloses a single tank, with a steel wall 40 corresponding to the “fluid tight barrier.” The Examiner further contends that the inner wall 30, steel liner 36, and insulation 38 together corresponds to the “inner structurally supporting wall element;” and that the mass wall 46, insulation layer 48 and outer concrete wall 50 together correspond to the “outer structurally supporting wall element.” *See* Office Action at p. 6. Applicants respectfully disagree.

First, GB 892 discloses an inner tank or container with a sidewall system 12, and an outer tank with at least the massive concrete wall 46 (everything outside of outer steel wall 40). GB 892 describes the massive concrete wall 46 and outer wall 50 as being separate from and not part of the same inner tank or container as the side wall 12. *See* GB 892 at p. 1, lines 73-87. Thus, the mass wall 46, outer wall 50 and insulation layer 48 cannot correspond to the “outer structurally supporting wall element” of the vertical wall of the inner tank as called for in claim 1.

Second, the vertical wall of the inner tank of GB 892 does not have an outer structurally supporting wall element made of concrete. The only portion of the vertical wall of the inner tank that is made of concrete is wall 30, which is an inner wall element, not an outer wall element. See GB 892 at Fig. 3. Furthermore, even assuming for the sake of the argument that steel liner 36 corresponds to a fluid tight barrier, the insulation layer 38 and/or the outer steel wall 40 could not correspond to the outer structurally supporting wall element. The insulation layer 38 and outer steel wall 40 do not structurally support the vertical wall and do not “*take the forces acting on the vertical wall and to protect the fluid tight barrier from loads.*” On the contrary, the insulation layer is made of non-structurally supporting material (e.g., foam); and the outer steel wall 40 does not take any forces or protect from loads. The outer steel wall 40 merely keeps the insulation 38 in place and prevents moisture from entering the insulation. See GB 892 at p. 2, lines 49-51. Thus, GB 892 does not teach or suggest an “outer structurally supporting wall element” as called for in claim 1. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claims 22-24, 26-29 and 32 depend from claim 1 and are allowable therewith, for at least the reasons set forth above, without regard to the further patentable subject matter set forth in these dependent claims.

Furthermore, GB 892 clearly fails to teach or suggest each and every element of claim 29. For example, GB 892 does not disclose that “the inner tank includes an interior volume, wherein the *concrete inner structurally supporting wall element is directly exposed* to the interior volume, wherein the fluid tight barrier is directly exposed to the concrete inner structurally supporting wall element, and wherein the concrete outer structurally supporting wall element is directly exposed to the fluid tight barrier” as called for in claim 29. Thus, claim 29 should also be in condition for allowance for at least this additional reason.

Rejection under 35 U.S.C. § 103 – Bomhard

Claim 28 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Bomhard. Claim 28 has been canceled and, therefore, the rejection is moot.

Rejection under 35 U.S.C. § 103 – Bomhard & Closner

Claim 3 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Bomhard in view of U.S. Patent No. 3,926,134 (“Closner”). The rejection should be withdrawn for at least the following reasons.

Claim 3 depends from claim 1. As discussed above, Bomhard fails to teach or suggest each and every element of claim 1. Closner fails to cure the deficiencies of Bomhard.

Even assuming for the sake of the argument that one of ordinary skill in the art would have been motivated to modify Bomhard to include a multi-axially prestressed concrete as allegedly taught by Closner, the resulting modification would still fail to teach or suggest a cryogenic tank that comprises, among other things, a vertical wall that “comprises an inner structurally supporting wall element made of concrete, *the inner structurally supporting wall element being an innermost wall element of the inner tank*” and/or “*the inner and outer structurally supporting wall elements being configured to take the forces acting on the vertical wall and to protect the fluid tight barrier from loads, and the inner structurally supporting wall element resisting against contraction forces resulting from storing the cryogenic fluid in the inner tank*” as called for in claim 1. Thus, the rejection under 35 U.S.C. § 103 is improper. Applicants respectfully request reconsideration and withdrawal of the rejection of claim 3.

Rejection under 35 U.S.C. § 103 – Bomhard & Yamamoto

Claims 30 and 31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Bomhard in view of U.S. Patent No. 3,595,423 (“Yamamoto”). The rejection should be withdrawn for at least the following reasons.

Claims 30 and 31 depend from claim 1. Bomhard fails to teach or suggest each and every element of claim 1. Yamamoto fails to cure the deficiencies of Bomhard.

Even assuming for the sake of the argument that one of ordinary skill in the art would have been motivated to modify Bomhard to include an outer tank and layer of insulation as allegedly taught by Yamamoto, the resulting modification would still fail to teach or suggest a

cryogenic tank that comprises, among other things, a vertical wall that “comprises an inner structurally supporting wall element made of concrete, *the inner structurally supporting wall element being an innermost wall element of the inner tank*” and/or “*the inner and outer structurally supporting wall elements being configured to take the forces acting on the vertical wall and to protect the fluid tight barrier from loads, and the inner structurally supporting wall element resisting against contraction forces resulting from storing the cryogenic fluid in the inner tank*” as called for in claim 1. Thus, the rejection under 35 U.S.C. § 103 is improper. Applicants respectfully request reconsideration and withdrawal of the rejection of claims 30 and 31.

Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application, as amended, is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Serial No. 10/517,427

Atty. Dkt. No. 033246-0166

Respectfully submitted,

Date February 12, 2010

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